

Exploring Science and English Language Development: Implications for Teacher Professional Learning

A conference hosted by the Exploratorium Institute for Inquiry® - January 9th & 10th, 2015

Conference Participant Biographies (Alphabetical by Last Name)

Jessie Auger

Bilingual Teacher, Rafael Hernández School, Boston Public Schools

Jessie Auger, a bilingual teacher in Boston Public Schools, has been an elementary classroom teacher for 24 years. Living in El Salvador and Puerto Rico and collaborating with teachers there for more than a decade helped to form her as an educator. Auger is an experienced teacher leader, mentor, and coach in the areas of literacy, math, project-based integrated curriculum design, and best practices with English Language Learners and bilingual education. She has provided professional development in the form of courses, workshops, and speaking engagements locally, nationally, and internationally. Her essay “Who Do We Hear? The Power of Language in the Mathematics Classroom” was included in the 2012 anthology *Rethinking Elementary Education*, and her article “The Author has the Last Word: Buddy Editing in a First Grade Classroom” was published in the *Harvard Educational Review*. In 2007, Auger was named Massachusetts Teacher of the Year.

Rita Bell

**Director of Education Programs
Monterey Bay Aquarium**

As Director of Education, Rita provides vision and leadership for innovative aquarium education programs that include:

- Teacher Programs serving 1,500 pre-service and in-service teachers and informal educators annually of varying scope and intensity.
- School Programs for 80,000 students who participate in exhibit- and lab-based activities at Monterey Bay Aquarium each year.
- Teen Programs for 300 middle and high school students that enable them to explore marine-related careers, participate in ocean conservation and conduct community-based conservation projects.

Rita is currently a member of ChangeScale, an environmental education collaboration for San Francisco and Monterey Bay Area. She serves on the board of the California Environmental Education Foundation and the California Environmental Literacy Task Force.

Bronwyn Bevan
Director of the Institute for Research and Learning
Exploratorium

Bronwyn Bevan is Director of the Exploratorium's Institute for Research and Learning. The Institute includes the museum's internationally renowned teacher development programs, equity-oriented community youth programs, research on learning programs, and tinkering and digital learning initiatives.

The Institute consists of 13 PhD natural and social scientists and some 40 master teachers and informal educators. During her 24 years at the museum, Bronwyn has been continuously inspired by the passion, creativity, and irony of her colleagues and by the museum's work to expand conceptions and experiences of learning. Her work in both research and professional development, for which she has received numerous federal grants, focuses on bridging fields of research and practice, informal and formal education, and intellectual and socio-emotional learning. She is a member of the National Research Council's Committee on STEM Learning in Out-of-School Time, is on the editorial board of the journal *Science Education*, and actively publishes and presents the work of the museum. Bevan holds a PhD in urban education.

Cory Buxton
Professor of Education, University of Georgia

Cory A. Buxton is a Professor of Educational Theory and Practice at the University of Georgia and a former high school science and ESOL teacher. His research explores fostering more equitable science learning opportunities for all students and especially for English learners. His most recent work is focused on creating spaces where students, parents and teachers can engage together as co-learners while strengthening their academic relationships, their knowledge of science and engineering practices and careers, and their ownership of the language of science. His research has been funded by the National Science Foundation, The U.S. Department of Education, and by several private foundations.

Sarah Capitelli
Assistant Professor, Teacher Education, University of San Francisco

Sarah Capitelli is an Assistant Professor at the University of San Francisco in the School of Education's Teacher Education Department. Sarah works with pre-service and practicing teachers to support their developing pedagogical practices for teaching bilingual, English learner, and immigrant students. She facilitates a teacher inquiry group comprised of USF graduates and current SFUSD teachers focused on supporting teachers' systematic examination of student data to improve their teaching practices with English learners. She also coordinates the Bilingual Authorization Program at USF. Additionally, Sarah has been working with the Institute for Inquiry at the Exploratorium since 2012, contributing a language development perspective to IFI's inquiry-based science professional development work.

Previously, Sarah was a kindergarten teacher in Anaco, Venezuela for two years and a first and second grade Spanish-bilingual teacher in East Oakland for six years. She received her MA in Early Childhood Development and Bilingual Teacher Credential from Mills College and her PhD in Educational Linguistics from Stanford University. Her research focuses on young English learners and their teachers and the role teacher inquiry can play in improving pedagogical practices for English learners.

Louann Carlamagno
Superintendent, Sonoma Valley Unified School District

Louann grew up in San Francisco and moved to Sonoma in 1974. She attended Altimira Middle School and SVHS. After graduation she attended Santa Rosa Junior College and then transferred to UC Davis as a Regent Scholar. She received her Bachelor of Science in Genetics in 1985; Louann was then hired by Genencor International and worked as a researcher in the Protein Biochemistry Department for 6 years. While at Genencor, she became interested in teaching and applied for a position as a science teacher in Sonoma Valley. She was hired and taught science for 5 years at Sonoma Valley High School. During this time she received her teaching credential in Chemistry and Life Science. From there she moved to Sonoma Charter School and taught integrated math and science to middle school students while obtaining her Administrative Credential. She was then hired as Vice Principal at Altimira Middle School where she spent a year and was then appointed principal at El Verano Elementary School. During her six years at El Verano, Louann received her Masters Degree in Educational Leadership from Sonoma State University. She was hired as Director of Curriculum & Instruction in 2006 and was appointed Superintendent in January 2010.

Tina Cheuk
Doctoral Candidate, Stanford University

Tina Cheuk works at Understanding Language, a national initiative based out of Stanford University to increase college, career, and community readiness for all students—especially English language learners—by transforming the quality of their educational experiences. She is currently researching classroom and school design efforts that support the development of both academic language practices and disciplinary learning as defined by CCSS, NGSS, and English Language Proficiency (ELP) standards across grades K-12.

She is a Teach for America alumna with experience as a teacher and school leader through the Knowledge Is Power Program (KIPP) schools. She is also a returned Peace Corps science education volunteer in Ghana. Her most recent role was directing the mathematics and science research, development, and design efforts at Strategic Education Research Partnership (SERP) in San Francisco Unified School District.

Sarah Delaney
Science Program Administrator, San Francisco Unified School District

Sarah's experience includes six years as a middle school science teacher, four years as a professional development provider and instructional coach and an exciting summer spent teaching science to three and four year olds. She has successfully provided teacher professional development on using science notebooking to support literacy, unit planning with Understanding by Design, the art and science of questioning, and the benefit of environmental education. She facilitates a strong network of 35 science education partners that support SFUSD teachers, students and families and created a website, greenthenextgen.org, to better connect experiences outside of the classroom to the learning standards. Sarah has successfully written and obtained grants to support SFUSD programs and is dedicated to ensuring that all students have access to high quality science learning.

Peter Dow
Chair, Firsthand Learning, Inc.

After teaching history for nine years I migrated to curriculum development in social studies at Education Development Center where I collaborated with Jerome Bruner on the creation of the controversial science-based social studies curriculum, “Man: A Course of Study”. In the 1990's, I led an NSF-funded initiative at the Buffalo Museum of Science that implemented inquiry-based elementary science to all PreK-6th Grade classrooms in the Buffalo Public Schools. My current work includes the development of a locally funded science and literacy initiative in a multi-lingual elementary school. Firsthand Learning, Inc. is a non-profit corporation that I co-founded in 1998 to foster inquiry-based learning and collaboration between cultural institutions and schools.

Patrick Dowd
Senior Science Educator, Professional Developer
Institute for Inquiry, Exploratorium

Patrick Dowd’s research background focused on how informal and formal contexts impact science learning. As a fellow with the Center for Informal Learning and Schools (CILS), he explored how environmental topics are taught and understood in informal environments such as field centers and museums. His doctoral thesis examined the link between science educators’ environmental identities and their practice in enacting an effective outdoor science education curriculum. His investigations took place at three field centers in the UK and at two science schools in the US that examined the narratives environmental educators’ used to describe themselves and their environment, and how these descriptions impacted their teaching practice. The study consisted of a mixed methodological approach using semi-structured interviews, questionnaires, and field observation methods. Previously, Patrick worked as an NSF Postdoctoral Fellow at the University of California Davis for ten years.

Angienette Desuyo Estonina
Elementary Supervisor, Multilingual Pathways Department
San Francisco Unified School District

Angienette is the Elementary Supervisor for the Multilingual Pathways Department in the Division of Curriculum and Instruction in San Francisco Unified School District (SFUSD) and has been in public education for 24 years. She holds a deep passion for language, culture and literacy development and is a strong advocate for English Language Learners. Her graduate work at UC Berkeley focused on language and literacy development through hands on science and has had the opportunity to work closely with Dr. Lily Wong-Fillmore as a graduate student in the late 90’s and more recently through her work with the Council of Great City Schools (CGCS). Ms. Estonina was part of a collaborative group of urban district leaders who contributed to the creation of their August 2014 publication *A Framework for Raising Expectations and Instructional Rigor for English Language Learners*. She also served as the Vice Chair of English Language Arts/English Language Development (ELA/ELD) Subject Matter Committee from 2012-2013, and participated in the revision of the 2014 ELA/ELD Framework for California Public Schools. She has also served as Director of the California Reading and Literature Project (CRLP) a California Subject Matter Project at UC Berkeley.

Christian Faltis

**Professor, Director of Teacher Education, Dolly & David Fiddymment Chair in Teacher Education
University of California, Davis**

Chris Faltis holds degrees from San Francisco State University, San José State University, and Stanford University, where he earned an MA and PhD. Prior to coming to UC Davis, he served on the faculties of Arizona State University and the Universities of Alabama and Nevada. Faltis was a Fulbright Senior Research Scholar at the National Autonomous University of Honduras, and a Visiting Scholar at UC Berkeley.

In 2001, he received the American Educational Research Association's Distinguished Scholar Award. Faltis has worked with schools and school districts in California, Connecticut, Illinois, Arizona, Nevada, New Jersey, and Texas to strengthen teaching and learning.

His work focuses on language diversity from critical hybridity theory to promote the creation of robust learning environments in which local language practices contribute to learning, interaction, and performance. Faltis is also an oil painter, whose work has been shown in Arizona, Georgia, and Texas and often addresses education themes.

Kris Gutierrez

Professor of Language, Literacy & Culture, University of California, Berkeley

Kris D. Gutiérrez is Professor of Language, Literacy and Culture. She was most recently a professor of Learning Sciences/Literacy and the Inaugural Provost's Chair, University of Colorado, Boulder and Professor Emerita of Social Research Methodology at GSE & IS at UCLA. Professor Gutiérrez is a national leader in education, with an emphasis in literacy, learning sciences, and interpretive and design-based approaches to inquiry. Gutiérrez is a member of the National Academy of Education and is the Past President of the American Educational Research Association and the National Conference on Research on Language and Literacy. Gutiérrez was appointed by President Obama and confirmed by the U.S. Senate as a member of the National Board for the Institute of Education Sciences where she served as Vice Chair.

Her research examines learning in designed learning environments, with attention to students from non-dominant communities and English Learners. Her work on Third Spaces examines the affordances of hybrid and syncretic approaches to literacy, new media literacies, and STEM learning and the re-mediation of functional systems of learning. Her work in social design experiments seeks to leverage students' everyday concepts and practices to ratchet up expansive forms of learning. Professor Gutiérrez's research has been published widely in premier academic journals and she is a co-author of *Learning and Expanding with Activity Theory*.

Andrés Henríquez

Vice President of STEM Learning in Communities at New York Hall of Science

Andrés Henríquez formerly served as a Program Director in the Division of Research and Learning in the Education and Human Resources Directorate (EHR) of the National Science Foundation (NSF). At the NSF Henríquez's primary responsibility included recruiting and running panels for proposal reviews and working with principal investigators for grant oversight. In addition, he worked in EHR's Office of the Assistant Director and assisted in building a strategy for philanthropic partnerships and contributed to building a

strategy for Hispanic Serving Institutions. Prior to joining NSF, Mr. Henríquez served as a program officer in the education division of Carnegie Corporation of New York, where he led the Corporation's work in college and career ready standards and assessments and oversaw the work of the Next Generation Science Standards. This included funding the National Research Council's *A Framework for K-12 Science Education*, funding Achieve Inc. to develop the framework-aligned *Next Generation Science Standards*, and funding the NRC to write "Developing Assessments for the Next Generation Science Standards". Earlier at Carnegie he launched the Advancing Literacy initiative which focused on literacy for students in grades 4-12 and included a substantial body of work to support English language learners. Mr. Henríquez received his undergraduate degree from Hamilton College and Masters degree from Teachers College, Columbia University.

Paula Hooper
Senior Science Educator, Learning Research Scientist
Institute for Inquiry, Exploratorium

Paula holds a PhD in Media Arts and Sciences with a focus on epistemology and learning with digital media. She has been an elementary classroom teacher; has worked on the design and teaching of inquiry-oriented science professional development experiences for K-8 teachers, administrators and museum educators; and worked with youth in informal settings on robotics and using digital design fabrication for their creative activism. Her research and teaching addresses uses of digital media to support STEM learning in both informal and formal learning settings from a sociocultural perspective. She is also interested in the design and facilitation of cyberlearning projects that complement STEM professional development. She is a member of the National Research Council Committee on Strengthening Science Education through a Teacher Learning Continuum. Paula has worked for TERC, the Massachusetts Institute of Technology, and the Shaker Heights public schools. She has served on advisory boards for Science Museum of Minnesota and the Technology Committee of the American Educational Research Association, and was a Warren Weaver Fellow at the Rockefeller Foundation.

Kim Gomez
Associate Professor, Urban Schooling and Information Studies
University of California, Los Angeles

Serving within the Urban Schooling Division at UCLA's Graduate School of Education & Information Studies, Associate Professor of Education Kim Gomez's work examines the intricate relationship between the development of literacy and the development of an equitable society. Her study of the connection between literacy and STEM education has contributed to advancements in STEM instructional approaches and learning outcomes. With a commitment to supporting underserved-student learning through access to mathematics and science curricula in middle, high school, and community college, Professor Gomez's work emphasizes language and literacy-rich mathematics and science teaching that is responsive to the learning needs of all students. Her work also employs digital media, learning technologies, and Web 2.0 technologies to support student learning both inside and outside the classroom. In addition to serving on the UCLA faculty, Professor Gomez continues to serve as a senior fellow and lead facilitator for Literacy and Language at the Carnegie Foundation for the Advancement of Teaching. Professor Gomez received her Ph.D. from the University of Chicago in Educational Psychology. She was a postdoctoral fellow in the Learning Sciences program at Northwestern University at Evanston.

Susan Gomez Zwiep
Associate Professor, Science Education
California State University, Long Beach

Dr. Gomez Zwiep began her career as a middle school science teacher in urban Los Angeles where she spent over 12 years working with English language learners. She is currently an associate professor in the Science Education Department at CSU Long Beach where she teaches courses in the teacher preparation and Master's of Science Education programs. She serves as a Regional Director for the K-12 Alliance/WestEd involved in the "NGSS Early Implementors" grants and is a member of the current CA Science Framework committee.

She has published in both research and practitioner journals such as *Science and Children*, *Science Scope*, the *Journal of Science Teacher Education* and the *International Journal of Mathematics and Science Education*. In addition, Gomez Zwiep has contributed to book chapters such as *Integrating Inquiry into the Science Classroom: Challenges and Possibilities*; *Professional Learning Communities for Science Teaching: Lessons From Research and Practice*. Dr. Gomez Zwiep consistently works toward establishing equitable access for all students to rigorous, inquiry-based science instruction and supporting teachers in their journey to become advocates for students, science education, and their own professional development.

She holds a BA in biology from the University of California, Berkeley and a PhD in science education from the University of Southern California.

Jenifer Helms
Researcher and Evaluator, Inverness Research

Dr. Jenifer V. Helms specializes in studying improvements in science, mathematics, engineering, and technology-related formal and informal education programs. She is particularly interested in projects involving engineering and technology education, cross-sector institutional partnerships, and leadership development. Prior to joining Inverness Research, she was director of education at two nationally recognized informal learning institutions. Jen was also assistant professor of science education at the University of Colorado in Boulder and taught high school science in California. She has a PhD in Curriculum and Instruction from Stanford University.

Salvador Huitzilopochtli
Doctoral Candidate, Education
University of California, Santa Cruz

Salvador Huitzilopochtli is a first-year doctoral student in education at UC Santa Cruz. He is a graduate of UC Berkeley's Masters and Credential in Science and Math Education (MACSME) program and has ten years of teaching experience. During his time as a teacher, he primarily taught middle school algebra. Mr. Huitzilopochtli also held positions as a Teacher on Special Assignment where he worked on a variety of projects, including program coordination (Title I, III), education technology, and data analysis and support. He also facilitated professional development sessions on topics ranging from Intro to Office 2010 to Culturally and Linguistically Relevant Teaching Strategies.

Mr. Huitzilopochtli is a native of Berkeley, CA, and a graduate of Berkeley High School. He is an Aztec dancer and once qualified for the Boston Marathon.

Maite Iturri,
Principal, El Verano School
Exploratorium Project Coordinator, Sonoma Valley Unified School District

Maite was born and raised in San Francisco, in a bilingual and bicultural home. Her father was a Basque immigrant from Spain and her mother an American from the mid-west. She attended Lowell High School, San Francisco City College, University of California Berkeley, Sonoma State, and she is currently working on a Doctorate at the University of California, Davis. Her undergraduate work focused on Mexican American studies and Latin American history. Her master's work focused on parent participation in the Latino community in Sonoma. At present she is studying the role of a principal in promoting literacy.

Maite is principal of El Verano elementary school where she works with the families and community that surround the school and with La Luz. She is particularly proud to have created a parent leadership group which fosters home-school communication. She has worked to provide Visual Thinking Strategies (VTS) and The Exploratorium Science Project, inquiry-based programs that encourage curious observers who collaborate and investigate. In addition, she started the first preschool in Sonoma Valley Unified and the first Community School in collaboration with La Luz, Boys and Girls Club and Sonoma Valley Health Center.

She has served on the Sonoma Valley Education Foundation (SVEF), Todd Trust Team (TTT) and Coordinating Council for Youth Development in Sonoma (CCYDS). She currently serves on the Community and Local Law Enforcement Task Force (CALLE) for Sonoma County.

Okhee Lee
Professor of Childhood Education, New York University

Okhee Lee is a professor in the Steinhardt School of Culture, Education, and Human Development at New York University. Her research areas include science education, language and culture, and teacher education. Her current research involves the scale-up of a model of a curricular and teacher professional development intervention to promote science learning and language development of English language learners. She was a member of the writing team to develop the *Next Generation Science Standards* (NGSS) and leader for the NGSS Diversity and Equity Team through Achieve, Inc. She is also a member of the Steering Committee for the Understanding Language Initiative at Stanford University. She was a 2009 Fellow of the American Educational Research Association (AERA), received the Distinguished Career Award from the AERA Scholars of Color in Education in 2003, and was awarded a 1993-95 National Academy of Education Spencer Postdoctoral Fellowship.

Joey Lehnhard
Senior Education Specialist, Monterey Bay Aquarium

Joey Lehnhard has worked with English-language learners and their teachers for more than a decade. After teaching elementary and middle school science in the Bay Area, she joined the Peace Corps, where she served as a professional learning coach for teachers in Lesotho, Africa. Upon her return, she worked as a research assistant for the English Language and Literacy Integration in Subject Areas (ELLISA) project at UCSC.

Currently, she leads the elementary-level teacher professional development opportunities at the Monterey Bay Aquarium. These include two summer institutes with school-year follow-up sessions; workshops for pre-service and elementary science release teachers; and a monthly series on literacy in science at the Pajaro Valley Unified School District in Watsonville.

She holds a bachelor's degree in Molecular Genetics from UC Davis and a master's in Education from UCSC.

Craig Madison
Teacher, El Verano Elementary School
Sonoma Valley Unified School District

Craig Madison practiced architecture and construction for 20 years before the birth of his daughter inspired him to become a public school teacher. He has taught 2nd and 3rd grades for 18 years. He and his students enjoy hands-on, inquiry-based science, where kids work in partnership with their teacher to design investigations and share what they have learned. Craig was an awardee of the Amgen Award for Science Teaching Excellence in 2011. He received his school district's 2012 Outstanding Educator Award, with his 3rd grade team, including Gennifer McDonald and Tim Curley, for their development of El Verano's Science/English Language Development (ELD) methodologies. He also received a 2013 Sonoma State University Circle of Excellence Award for his student-teacher mentorship and his collaborative science work.

Craig is a member of El Verano's leadership team, and has been a pilot/lead teacher for Visual Thinking Strategies (VTS), which facilitates student conversations about art, phenomena, and shared experiences. He has also been a pilot/lead teacher for the El Verano/Exploratorium Science/ELD project. He and his team-member, Gennifer McDonald, have presented their Science/ELD work during the SF Exploratorium's BaySci Summer Workshops for science educators. Craig participated as one of four pilot teachers in El Verano School's Summer Reading Academy, a successful and revolutionary summer reading experiment, which set aside test scores so children could rediscover reading for pleasure and by choice.

Gennifer McDonald
Academic Coordinator, El Verano Elementary School
Sonoma Valley Unified School District

Hello! I am Gennifer McDonald. I am currently the Academic Coordinator for El Verano Elementary School in the beautiful town of Sonoma, California. I have been an educator for ten years, eight of which have been at El Verano. I have always worked with English Language Learners and have continued to improve my practice and knowledge in English Language Development over the course of my career. I have been fortunate to be a part of the partnership and development of the Science and ELD program between El Verano and the Exploratorium where Science is being used as the vehicle for language development and instruction. I love teaching and learn every day as an educator!

Karla Lomeli
Doctoral Candidate, Stanford University

Karla has been teaching English Language Arts at the High School level to English Language Learners in East Side San Jose. Recently she has been working under the laboratory of Dr. Guadalupe Valdes. Prior to attending Stanford much of her work was concentrated in working with teachers to develop instructional strategies that best support the language needs of Latino ELLs.

Barbara J. Merino
Professor, School of Education, University of California, Davis

Barbara J. Merino is a former second language teacher and professor in education and linguistics at the University of California, Davis. She received her Ph.D. in educational linguistics from Stanford University. She served as Director of Teacher Education at UCD for eighteen years where she led the design, evaluation and implementation of a credential MA targeting advocacy for educational equity through teacher research in diverse communities. Her research has focused on bilingual and second language development, teacher preparation and language assessment in children and adults and case study research of teacher learning in diverse communities. She has authored or co-authored articles appearing in *Educational Evaluation and Policy Analysis*, *Language Learning*, *Foreign Language Annals*, *Urban Education*, *N.A.B.E Journal*, *Hispanic Journal of Behavioral Sciences*, and *Teacher Education Quarterly*. With Henry Trueba and Fabian Samaniego, she co-edited *Language and Culture in Learning*. Recent publications have targeted cases of teacher research on academic literacy in science and language arts, published in the Teacher Education and NSSE Yearbooks.

Emily Miller
ESL/BRT Elementary Teacher, Madison Metropolitan School District
University of Wisconsin, Madison

Emily Miller is a practicing teacher and a lead writer on the NGSS Diversity and Equity writing team. She has taught science as an ESL/bilingual resource science specialist at a Title 1 school for 17 years. Emily teaches the NGSS in her own classroom and improves and refines teaching to the standards with her students. She is consulting with the Wisconsin Center for Educational Research to develop teacher tools to promote sense making and language learning for English language learners in science. Emily authored an NGSS culturally responsive engineering grant, a school garden curriculum grant, and a culturally and linguistically responsive teacher training grant for her school district. She is pursuing a PhD at the University of Wisconsin-Madison.

Judit Moschkovich
Professor of Mathematics Education, University of California, Santa Cruz

Judit Moschkovich is Professor of Mathematics Education in the Education Department at the University of California, Santa Cruz. Her research uses socio-cultural approaches to study mathematical thinking and learning focusing on: algebraic thinking, mathematical discourse, and mathematics learners who are bilingual, learning English, and/or Latino/a. In addition to published articles and book chapters, she edited the book *Language and Mathematics Education: Multiple Perspectives and Directions for Research* (2010), co-edited (with K. Tellez and M. Civil) *Latinos/as and Mathematics Education: Research on Learning and*

Teaching in Classrooms and Communities (2011), and co-edited (with M. Brenner) a *Journal for Research in Mathematics Education Monograph, Everyday and Academic Mathematics: Implications for the Classroom* (2002). She was a National Academy of Education (NAE/Spencer) Post-Doctoral Fellow (1995–97), PI of the NSF research project “Mathematical discourse in bilingual settings: Learning mathematics in two languages” (1998–2003), affiliated faculty for CILS, and Co-PI for CEMELA (Center for the Mathematics Education of Latinos/as) a Center for Learning and Teaching funded by NSF (2004-2011). Dr. Moschkovich is a founding partner of Understanding Language (a project focused on supporting English Language Learners to meet the CCCSS), serves on the Steering Committee and co-chairs the Mathematics Work Group. Dr. Moschkovich is originally from Argentina and her first language is Spanish.

Naomi Mulvihill
Teacher, Rafael Hernández School
Boston Public Schools

Naomi Mulvihill is a bilingual educator and poet. She completed her Masters’ at Harvard where she studied with Eleanor Duckworth and Courtney Cazden. For the past thirteen years, she has worked as a dual-language teacher in Boston. Prior to that, Mulvihill developed curricula and served as a consultant in public schools in the U.S. and Mexico.

Katherine Nielsen
Co-Director, Science & Health Education Partnership (SEP)
University of California, San Francisco

Katherine Nielsen is Co-Director of the Science & Health Education Partnership (SEP) at the University of California at San Francisco (UCSF). Trained as an educator and a scientist, she has taught science at the middle through undergraduate level; conducted research in developmental neurobiology; and taught undergraduate and graduate courses in education. Ms. Nielsen has years of experience in the scientist-teacher partnership field, including launching the International Teacher-Scientist Partnership Conference in 2013. She is a co-founder of the Bay Area Science Festival, an annual 10-day celebration of science that reaches over 60,000 people. Under her leadership, UCSF SEP’s High School Intern Program was awarded the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring in 2011. She is co-author of *Girls in Science: A Framework for Action*. She has a Masters of Arts in Education from Stanford University and a Masters of Science in Biology from Montana State University.

Annemarie Sullivan Palinscar
Jean and Charles Walgreen, Jr. Professor of Reading and Literacy
University of Michigan

Annemarie’s primary research interest is in supporting students to learn how to engage in knowledge building with informational text, especially in the context of project-based scientific investigations. With her research group - and in collaboration with computer scientist, Elliot Soloway—she has designed and studied the use of a cyber-learning environment in which students collaborate as they read texts, view video, use simulations, write, and draw, while engaging in scientific inquiry. With science educator, Betsy Davis and the ELECTS team, she has recently conducted a series of studies investigating the value of educative supports for science

teaching in the upper elementary grades. With linguist, Mary Schleppegrell and the Language and Meaning research group, she has used design-based research to investigate the process and outcomes of teaching English learners the use of functional grammar analysis as a means of supporting them to interpret and learn from narrative and informational text. Annemarie is a teacher educator who prepares elementary educators and she teaches in the graduate program for the Literacy, Language, and Culture Program at the University of Michigan.

Helen Quinn

Professor Emerita of Physics, SLAC National Accelerator Laboratory, Stanford University & Committee Chair for Conceptual Framework for New K-12 Science Education Standards

Helen Quinn is Professor Emerita of Particle Physics and Astrophysics at SLAC National Accelerator Laboratory. She received her PhD in physics at Stanford in 1967. She has taught physics at both Harvard and Stanford. Dr. Quinn is an internationally recognized theoretical physicist who holds the Dirac Medal (from the International Center for Theoretical Physics, Italy), the Klein Medal (from The Swedish National Academy of Sciences and Stockholm University) and the Sakurai Prize (from the American Physical Society). She is a member of the American Academy of Arts and Sciences, the National Academy of Science and the American Philosophical Society. She is a Fellow and former president of the American Physical Society. She is originally from Australia and is an Honorary Officer of the Order of Australia.

Dr. Quinn has been active in science education for some years. She served as Chair of the US National Academy of Science Board on Science Education (BOSE) from 2009-2014. She served as a member of the BOSE study that developed the report “Taking Science to School” and chaired the committee for the *Framework for K-12 Science Education*, which is the basis of the *Next Generation Science Standards* (NGSS) that have now been adopted by multiple states in the US. She also served on the committee that developed the report “Developing Assessments for the Next Generation Science Standards”. She is a member of the steering committee of the Understanding Language coalition at Stanford University, with a focus on the intersection of science learning and language learning.

Katherine Ramage

Senior Researcher, Inverness Research

Katherine Ramage is a research consultant with Inverness Research. She conducts research and evaluation of innovative science, mathematics and literacy programs aimed at improving teaching and learning for students who are linguistically and culturally diverse, underserved, and/or low performing. Her background in sociolinguistics, specifically bilingualism, second language acquisition, and language attitudes, shapes her perspective. She has studied the Exploratorium and Sonoma Unified’s Partnership for Integrating ELD and Science, and Seattle Public School’s elementary hands-on science and writing program. She is currently studying a model for developing student academic language across disciplines. She holds a B.A. in French, and M.A. and Ph.D. from Stanford University School of Education in Language, Literacy, and Culture.

Lynn Rankin
Director, Institute for Inquiry, Exploratorium

Lynn Rankin is Director of the Exploratorium's Institute for Inquiry, a national professional development center for K-5 practitioners and leaders of elementary science reform efforts. Lynn has decades of experience in science curricula development, teacher professional development and program design in both formal and informal learning environments. She was a co-founder and faculty member of the Association of Science and Technology Centers' Professional Development Institutes for museum educators; she served on the faculty of the NSF-funded Center for Informal Learning and Schools, a collaboration between the Exploratorium, King's College, and the University of California at Santa Cruz. She has contributed to numerous national publications and committees, including the National Science Foundation's, *Foundations II: Inquiry, Thoughts, Views and Strategies for the K-5 Classroom*, the National Academy of Science's committee to develop *Inquiry and the National Science Education Standards* and National Institute for Science Education's Committee on Professional Development. She has served as PI on numerous National Science Foundation, U.S. Department of Education, and private foundation grants. She leads the US DOE funded i3 (Investing in Innovation) project "Integrating ELD and Science: A Professional Development Approach" and the BaySci Science Champions Academy. Before joining the Exploratorium in 1975, she taught elementary school in the San Francisco Unified School District.

Diego Román
Assistant Professor in Teaching and Learning
Simmons School of Education and Human Development, Southern Methodist University

Dr. Diego Román is an Assistant Professor in Teaching and Learning at Southern Methodist University, specializing in bilingual and science education. He holds a B.S. degree in Agronomy from Zamorano University in Honduras and a M.S. degree in Curriculum and Instruction from the University of Wisconsin-Whitewater. He earned a M.S. degree in Biology, a M.A. in Linguistics, and a Ph.D. degree in Educational Linguistics, all from Stanford University. Prior to starting his studies at Stanford University, Dr. Román taught middle school science to English Learners and newcomer students for seven years, first in rural Wisconsin and then in San Francisco, California.

Dr. Román's research interests are located at the intersection of linguistics, science education, and environmental studies. Specifically, he studies the linguistic and multimodal characteristics of science texts that are used at the middle school level with the purpose of defining the features of the language of science instruction. In addition to his ongoing collaboration in MOOC and literacy development in science instruction, Dr. Román is conducting research that address the needs of teachers working in dual-language programs and studying the best practices of teaching science to bilingual students. Finally, he is currently analyzing the language used to teach climate change at the middle school level and also participating in an initiative that seeks to improve the quality of English as a foreign language and science instruction in the Galapagos Islands.

María Santos
Director, School and District Services, WestEd
Co-chair and Senior Advisor for Leadership, Understanding Language, Stanford University

María Santos is the Co-chair and Senior Advisor for Leadership at the Understanding Language coalition at Stanford University and Director for School and District Services in the Comprehensive School Assistance Program at WestEd. From 2010-2014, she served as Deputy Superintendent for Instruction, Leadership and

Equity-in-Action for the Oakland Unified School District and is a 2014 *Leaders To Learn From* leader selected by Education Week. Until 2010, she was, the Senior Instructional Manager and Superintendent for the Office of English Language Learners (ELLs) at the New York City Department of Education. In that capacity, she led the Office in ensuring that Children First reforms were raising the academic rigor of ELLs through quality teaching and learning citywide. Early in these reforms, she led the restructuring of New York City's Early Childhood, ELL, and Instructional Technology departments. Ms. Santos has designed and developed strategic initiatives and resources for several nonprofit organizations that provide state and national support, setting trends in the educational agenda nationwide. As an Education Program Officer at Wallace-Reader's Digest Funds, Ms. Santos designed the Leadership for Education Achievement in District (LEAD) project—a program that engaged twelve urban districts in twelve states in developing educational leadership to improve student learning. Before going to New York City, Ms. Santos spent 20 years in the San Francisco Unified School District (SFUSD). As Associate Superintendent, she supervised the development of major instructional improvement initiatives such as SFUSD's Professional Development Initiative and gained SFUSD the recognition of an Exemplary Site by the U.S. Department of Education's National Award for Professional Development.

Claudia Scharff

STEM Elementary School Science Content Specialist

San Francisco Unified School District, Division of Curriculum and Instruction

I was an elementary Spanish bilingual resource science teacher, as well as a 3rd, 4th and 5th grade classroom teacher at Alvarado Elementary School in SFUSD. As an academic coordinator at the Science and Health Education Partnership at UCSF, I worked with colleagues to implement a grant from the National Institute of Health partnering scientists and teachers to integrate science learning and language development for K-5 students in SFUSD. My colleague and I presented "Experiencing Science as a Language Learner," a science lesson in Spanish for primarily English speakers, at CSTA and NSTA in 2006. This fall I began working in the STEM department of SFUSD in Elementary School Science. My daughter attends a dual immersion elementary school in SFUSD and my son attends an immersion preschool.

Terry Shanahan

Science Academic Coordinator, University of California, Irvine

Dr. Terry Shanahan started her 28-year science education career teaching high school Chemistry and Physics in Southern California. She has developed science curriculum for pre-K to grade 12, with a special focus on English Learner strategies since 2000. She has been a frequent presenter at numerous National Science Teacher Association (NSTA) and California Science Teacher Association (CSTA) conferences. Dr. Shanahan served with the team of science educators who wrote the California Department of Education Professional Learning Module for Common Core State Standards: Literacy in Science. For the last two years, Dr. Shanahan has written and facilitated a series of afterschool science lessons for English Learners at the Boys and Girls Club in Santa Ana. Her research interests include the effects of student talk strategies on science and math content acquisition and comprehensible science curriculum for English Learners. With her colleague, Dr. Lauren Shea, she has published several articles about the positive effect of intentional student talk strategies in supporting English Learner achievement in science and math.

Jerome Shaw
Associate Professor of Science Education, Emeritus
University of California, Santa Cruz

Jerome is a science educator with over three decades of experience in the field. Throughout, his efforts have focused on improving educational opportunities and outcomes for culturally and linguistically diverse students. As a K-12 teacher in California public schools he taught science in mainstream and special programs such as bilingual (Spanish-English) and outdoor education. As an educational consultant he assisted science education reform initiatives across the US in the areas of curriculum, instruction, assessment, and teacher professional development. As a university professor he taught classes on educational assessment and science teaching methods while researching effective science instruction for and assessment of English Language Learners. Recently retired, he continues to be active in the preparation of future science teachers as well as promoting equitable science education for underserved populations.

Lauren M. Shea
Director of Education, Outreach, and Diversity
University of California, Irvine

Dr. Lauren M. Shea is the director of Education, Outreach, and Diversity at Chemistry at the Space-Time Limit (CaSTL) in the University of California, Irvine. With degrees in bilingual education, E.S.L., and applied linguistics, her current research and practice centers on the integration of language development strategies in the content area of science. Before conducting research in language-based classrooms, Dr. Shea was a classroom teacher and site-coordinator in a Dual Immersion school. Along with Dr. Terry Shanahan, her relevant publications include “Using Science as a Context For Language Learning: Impact and Implications from Two Professional Development Programs” (2012), “Incorporating English Language Teaching through Science for K-2 Teachers” (2012), “Student Talk: Oral Language Development through Science” (2011), and “A Review of Teachers’ Roles in Second Language Learning: Classroom Applications of Sociocultural Theory” (2014).

Maria Chiara Simani
Executive Director, California Science Project
University of California, Riverside

Maria C. Simani is the Executive Director of the California Science Project. Dr. Simani previously served as UC Riverside P-20 Regional Alliance Director, a partnership with the University of California and local stakeholders to increase graduation rates for K-12 youth. Since 2012, Dr. Simani has collaborated with the California Department of Education (CDE) on the Science Expert committee for the review and adoption of the Next Generation Science Standards. Dr. Simani and the California Science Project have been appointed by CDE as lead writers of the new California Science Curriculum Framework. Currently, Dr. Simani serves as member of the K-12 education subcommittee at the American Physical Society, Advisor Board member on the K-8 NGSS Early Implementation project in California, and as Advisor Board member on the California STEM Learning Network. The California Commission on the Status of Women and Girls nominated Dr. Simani in 2013 as one of the Trailblazer STEM Women of the Year. Dr. Simani conducted physicist research at DESY, at the Stanford Linear Accelerator Center, and at the Lawrence Livermore National Laboratory. Dr. Simani also performed research on brain functioning and learning at the Keck Institute for Integrative Neuroscience at the University of California, San Francisco.

Rebecca Smith
Co-Director, Science & Health Education Partnership (SEP)
University of California, San Francisco

Rebecca Smith has been supporting science teaching and learning in public schools for more than 19 years. She has extensive experience developing and implementing teacher-scientist partnership programs, teaching doctoral students and postdoctoral fellows, and leading professional development for teachers. In addition, she has significant grant writing, program administration and evaluation experience. Through her work with SEP, Rebecca has designed innovative learning experiences that engage students, from youths to adults, as scientists in the classroom, helping them to discover big ideas in science and to learn how to think critically and make conclusions using evidence. Rebecca has also served as an advisor to out-of-school time programs seeking to incorporate opportunities for STEM learning in their programming. Under Rebecca's leadership, SEP's High School Intern Program received the 2011 Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring.

Fred Stein
Senior Science Educator, Professional Developer
Institute for Inquiry, Exploratorium

Fred was the Education Director at the Science Discovery Museum in Acton, Massachusetts, before joining the Institute for Inquiry staff. In addition to teaching high school biology and math, he has developed curricula, taught distance learning courses, and pre-service science methods courses. Fred holds an EdD from the Harvard Graduate School of Education.

Savanna Susnow
Biliteracy-Bilingual Teacher, 5th Grade
Graduate Candidate, Urban Education & Social Justice, and Reading Specialist
San Francisco Unified School District & University of San Francisco

Savanna Susnow is a fifth grade bilingual teacher in a large urban school district. Working with native-Spanish speakers, she supports her students beyond the parameters of the classroom walls using additive bilingualism. Devoted to enriching the classroom experiences for low-income and/or youth of color, she utilizes humanizing pedagogy that builds community, a sense of belonging and pride.

In addition to teaching, Savanna is a graduate student at the University of San Francisco. Concentrating in urban education and social justice, as well as reading intervention as a reading specialist, she hopes to provide critical reading intervention to build students' academic L1 and L2 using explicit and implicit reading comprehension strategies.

Guadalupe Valdés
Bonnie Katz Tenenbaum Professor of Education, Stanford University

Guadalupe Valdés is the Bonnie Katz Tenenbaum Professor of Education at Stanford University. Working in the area of applied linguistics, Dr. Valdés' research explores many of the issues of bilingualism relevant to teachers in training, including methods of instruction, typologies, measurement of progress, and the role of education in national policies on immigration. Specifically, she studies the sociolinguistic processes of linguistic acquisition by learners in different circumstances—those who set out to learn a second language in a formal school setting (elective bilingualism) and those who must learn two languages in order to adapt to immediate family-based or work-based communicative needs within an immigrant community (circumstantial bilingualism). Her research in these areas has made her one of the most eminent experts on Spanish-English bilingualism in the United States.

Dr. Valdés is a member of the American Academy of Education, a Fellow of the American Educational Research Association (AERA), and a member of the Board of Trustees of Educational Testing Service (ETS). She is a founding partner of Understanding Language, an initiative that focuses attention on the role of language in subject-area learning, with a special focus on helping English Language Learners meet the new *Common Core State Standards* and *Next Generation Science Standards* (<http://ell.stanford.edu>).

Claudio Vargas B.
Coordinator, Elementary Science
Oakland Unified School District

Claudio Vargas B. is the Coordinator of Elementary Science at the Oakland Unified School District. He oversees and supports the implementation of the science program at the 54 district elementary schools. Before joining OUSD, Mr. Vargas served as the Director of the Bay Area Science Project (BASP) at UC Berkeley's Lawrence Hall of Science (LHS). Mr. Vargas has led numerous professional development programs throughout the Bay Area, Los Angeles, Texas, and El Salvador. He has designed and implemented K – 8 professional development programs that focus on developing teachers' science content knowledge and expanding their teaching strategies, with particular emphasis on strategies that provide English Language Learners with access to the core curriculum.

Prior to joining LHS, Mr. Vargas worked for 10 years as a bilingual K-5 teacher and a science coach in the Oakland Unified School District, 11 years as a science researcher at the School of Pharmacy at the University of California, San Francisco, and 9 years at the Department of Bioengineering at the University of Minnesota.

Sharon Verhalen
Doctoral Candidate, University of California, Davis

I taught elementary multiage education in Davis, CA. I based my curriculum on science and literature. I received my BA, Teaching Credential, and MS degree from UC Davis. I am currently writing qualifying papers as I pursue my Doctoral degree.

Beth Warren**Co-Director, Chèche Konnen Center for Science Education Reform, TERC**

Beth Warren has co-directed the Chèche Konnen Center at TERC since 1990. In collaboration with many people, she has documented the wide-ranging sense-making repertoires of children from historically underserved communities, designed learning environments that support expansive sense-making in science, and developed approaches to professional learning that integrate sense-making, subject matter, classroom practice, and historically structured inequalities on the same plane of inquiry. She is currently engaged in exploring the potential of an arts/science repertoire of thinking and making as a foundation for formal and informal learning in complex domains such as climate change and the human microbiome.

Karen Worth**Chair, Elementary Education Department, Wheelock College**

Karen Worth has been a faculty member at Wheelock College for over 35 years, where she teaches early childhood and elementary education with a focus on science education. She works closely with the Mathematics and Science Department to enhance the mathematics and science preparation of pre-service students at the college. She also coordinates the Integrated Elementary and Special Education program at the graduate level. She is currently Chair of the Elementary Department. Ms. Worth also worked as a senior research scientist at Education Development Center, Inc. for more than 25 years leading a range of programs focused on science curriculum development, professional development, and systemic reform. She has been a consultant and advisor to a number of museums including the Boston Children's Museum and the Chicago Children's Museum. She has advised public television stations such as WGBH and PBH and community organizations across the country and internationally. She is a recipient of the Exploratorium's Outstanding Educator Award for her work in science education, the international purkwa prize for the scientific literacy of the children of the planet, and the NSTA Distinguished Service Award. She is the author of numerous articles and book chapters and was the principal investigator in the development of *The Young Scientist Series* (Redleaf), *Worms, Shadows and Whirlpools* (Heinemann), *Insights, An Elementary Hands-On Science Curriculum* (Kendall Hunt), *Science and Literacy: A Natural Fit*, and *The Essentials of Science Literacy* (Heinemann.)

For additional information and materials related to the conference "Exploring Science and English Language Development: Implications for Teacher Professional Learning", visit the Institute for Inquiry at exploratorium.edu/education/ifi/inquiry-and-eld.



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